

REMARKS

Claim 25 is canceled without prejudice, and therefore claims 1, 3, 4, 6, 7, 9, 10; 12 to 24 and 26 are now pending and being considered.

It is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

With respect to paragraph two (2), Applicants thank the Examiner for considering and making of record all of the references in the IDS filed on April 2, 2002.

With respect to paragraph nine (9), Applicants thank the Examiner for allowing claim 26, and for indicating that claims 21 to 25 would be allowable if rewritten to overcome the 101 rejections. While the rejections may not be agreed with, to facilitate matters, claim 25 is canceled without prejudice. The rejections as to claims 21 and 22 are traversed, since these claims are to a *method* and *not a program per se*, as explained below. The rejections as to claims 23 and 24 are traversed, since these claims are to an *apparatus* and *not a program per se*, as explained below. It is therefore respectfully requested that the 101 rejections be withdrawn.

With respect to paragraph four (4) of the Final Office Action, the requirement to amend the specification to include the material of Boneh et al. as referred to in the specification is again *traversed*. *None of the pending claims even recites the word integer, and it is therefore respectfully submitted that a specific method of the generation of such integers is not essential to the claimed subject matter – as claimed.* In particular, it is respectfully submitted that any review of the cited portions of the Specification and of the claims themselves makes plain that the *generation of partial digital signatures in the absence of a trusted third party (as referred to by the Examiner) is disclosed at page 2, line 33, to page 3, line 15, as is the generation method of partial digital signatures, which is described in detail at page 19, line 32, to page 21, line 14.* The Boneh reference is merely cited as an example for generating integers -- and is not recited for describing the disclosed generation of the partial digital signatures, which is disclosed at page 2, line 33, to page 3, line 15, as is the generation method of partial digital signatures, which is described in detail at page 19, line 32, to page 21, line 14. Withdrawal of the objection to the specification or to the requirement to explicitly incorporate the integer generation method from the “Boneh” reference is therefore respectfully requested.

With respect to paragraph five (5), claims 7, 10, and 15 to 20 are objected to for assertedly not including transitional phrases. Withdrawal of the objections to claims 7, 10, and 15 to 20 is respectfully requested, since each of the claims has been rewritten to include the term “comprising”, as suggested.

With respect to paragraph six (6), claims 21 to 25 were rejected under 35 U.S.C. 101. While the rejections may not be agreed with, to facilitate matters, claim 25 has been canceled without prejudice. The rejections as to claims 21 and 22 are traversed, *since these claims are to a method and not a program per se*. The rejections as to claims 23 and 24 are traversed, *since these claims are to an apparatus and not a program per se*. It is therefore respectfully requested that the 101 rejections be withdrawn. It is believed that the Final Office Action confuses both Section 101 and claim 21 (as well as claim 23) by asserting that claim 21 is to a “program that does not have a concrete and tangible output”.

First, claims 21, 22 and 23, 24 are to a method and an apparatus respectively, and not to a program per se.

Also, Applicants do not understand why the Examiner is raising this issue in view of the recent Precedential Opinion of the Board of Patent Appeals and Interferences, Ex parte Carl A. Lundgren (paper no. 78), Appeal No. 2003-2088 (U.S. Patent Application Serial No. 08/093,516) (case Heard April 20, 2004). In this Precedential opinion, the Board made plain that any “technological arts” test (which is what the Office Action essentially asserts) is inconsistent with both Federal Circuit and Supreme Court law.

To the extent that the Examiner maintains this rejection in view of Lundgren, it is respectfully requested that the Examiner explain exactly how its rejection is supported in view of the Board’s precedential Lundgren opinion.

Still further, it is respectfully submitted that the rejected claims do satisfy Section 101 since they are directed to a *method (claims 21 and 22)* or to an *apparatus (claims 23 and 24)* which are patentable in each case and which have utility in each case. It is suggested that the Lundgren opinion and the MPEP at 2106 and 2107 (regarding the Examination Guidelines for the utility requirement) makes plain that claims 21, 22 and 23, 24 have utility under Section 101. It is also respectfully submitted that the reasons advanced in support of the rejection are simply not supported by either the Examination Guidelines or more importantly

the case law, and that a *prima facie* case has not been presented as required by Sections 2106 and 2107 of the MPEP.

In this regard, the Board of Patent Appeals — in reversing another Examiner for ignoring the law of State Street — has stated that claimed subject matter having a “practical application” is § 101 statutory subject matter if the subject matter represents a “useful, concrete and tangible result” under State Street, and has further stated that the Federal Circuit’s reasoning in State Street is “intended to be broadly construed”. See Ex parte Donner, 53 U.S.P.Q.2d 1699, 1702 (Bd. Pat. App. & Int. 1999).

Still further, the Federal Circuit -- as well as the Patent Office — has not required that *method claims* recite how the method steps are to be performed. In AT&T Corp. v. Excel Communications Inc., 50 U.S.P.Q.2d 1447 (Fed. Cir. 1999), the Federal Circuit stated that the claims of U.S. Patent No. 5,333,184 (“the ‘184 patent”) were plainly directed to § 101 statutory subject matter. See *id.* at 1452. (“Excel also contends that because the process claims at issue lack physical limitations set forth in the patent, the claims are not patentable subject matter. This argument reflects a misunderstanding of our case law. . . . Since the claims at issue in this case are directed to a process in the first instance, a structural inquiry is unnecessary”).

It is therefore respectfully requested that the Section 101 rejections of claims 21, 22, 23, and 24 be withdrawn in view of the Lundgren precedential opinion of the Board of Patent Appeals and Interferences (in its *per curiam* opinion), the State Street case, and the MPEP at Sections 2106 and 2107.

Claim 21 is to a distributed digital signature generation method for generating and outputting an integrated digital signature.

Claim 23 is to a distributed digital signature generation apparatus for generating and outputting an integrated digital signature.

In particular, and as previously explained, the independent claims 21 and 23 as previously rewritten are based on the original dependent claims and the disclosure at page 27, line 8, to page 28, line 26, and Figs.6-8. More particularly, the partial digital signature number set selecting step is based on the disclosure at page 27, lines 8-11 and Fig.6. The signature verification step is based on the disclosure at page 27, lines 15-18. The incorrect partial digital signature existence determination step is based on the processes of Fig.7, and the incorrect partial digital signature specifying step is based on the processes shown of Fig.8.

The result output step is understood since the presently claimed subject matter is related to a service for generating a digital signature for a digital document in which correct integrated digital signature should be output when the correct integrated digital signature is generated, especially in view of the fact that Figs.9-11 suggest the result output step. Still further, by adopting the incorrect partial digital signature existence determination step and the incorrect partial digital signature specifying step as provided for in the independent claims 21 and 23, the presently claimed subject matter produces remarkable effects, as is essentially discussed at page 29, line 1, to page 31, line 4, and at page 36, line 30 to page 38, line 37, in the specification with reference to Figs.13 and 14.

Accordingly, claims 21 and 23 are allowable, as are their respective dependent claims 22 and 24, as presented.

Although not believed to be necessary, it is noted that if the Examiner believes that it may facilitate matters, the Applicants would be willing to rewrite claim 21 to provide that the distributed digital signature generation method is performed by a distributed digital signature generation apparatus.

With respect to paragraph seven (7), claims 1, 3, 7, 9, 13, 15, 17, and 19 were rejected under 35 U.S.C. § 103(a) as obvious over Malkin, Michael et al. "Building Intrusion Tolerant Applications," Darpa Information Survivability Conference and Exposition, 2000 (the "Michael et al." reference), in view of U.S. Patent No. 4,405,829 to Rivest et al.

With respect to paragraph eight (8), claims 4, 6, 10, 12, 14, 16, 18, and 20 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of the "Malkin" reference in view of the "Rivest" reference, and further in view of U.S. Patent No. 5,610,982 (the "Micali" reference).

In rejecting a claim under 35 U.S.C. § 103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and

not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim features. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

It is respectfully submitted that the rejections are not understood since they all rely on the assertion of the Final Office Action, which states that “the features upon which applicant relies (i.e., using particular variables for the ‘predetermined values’ are not recited in the claims”. *In fact each of the rejected independent claims was previously rewritten to provide that “a least common multiple of predetermined values is used as a transformation number in said transformation process”*. It is believed that this is exactly what the Final Office Action refers to, so that no limitations are being read in from the specification, as asserted.

In particular, with respect to the amended independent claims, including claim 1, as presented, the feature of claim 2 is incorporated into each of the independent claims. As explained herein, the presently claimed subject matter of claim 1, as presented (as well as the other independent claims) *is characterized in that a least common multiple (LCM) of predetermined values is used as the transformation number* – as recited in each of the independent claims rejected as obvious.

The Final Office Action asserts that the Rivest reference suggests using LCM as a transformation number. However, Rivest uses LCM for generating a key based on two prime numbers p and q , and therefore it does not suggest using LCM as a transformation number in a transformation process for generating integrated digital signature based on partial digital signatures as provided for in the context of claim 1 as presented.. According to the presently claimed subject matter, as described in page 24 in the specification, time complexity for generating the integrated digital signature can be decreased.

The Micali reference also does not in any way disclose or even suggest these features of the claimed subject matter of claim 1 as presented, and its corresponding dependent claims, or any of the other independent claims 4, 7, 10 and 13 to 20 as presented (which are like claim 1 as presented), as well as their respective dependent claims 3, 6 and 9.

The MALKIN reference essentially corresponds to the “first conventional method” in the specification. Accordingly, as discussed in the specification, MALKIN only concerns a

system in which partial signature keys are generated by each of partial digital signature generation systems without using a third party, and partial information on the partial signature key is exchanged each other, then, digital signature can be generated if a predetermined number (threshold) of the partial digital signature generation systems operate properly.

It is respectfully submitted that it would not be obvious to modify MALKIN by using the algorithm of Rivest since Rivest does not suggest using LCM as a transformation number in a transformation process for generating integrated digital signature, as provided for in the context of claim 1 as presented (and dependent claim 3), as well as claims 4 (and dependent claim 6), 7 (and dependent claim 9), 10 and 13 to 20

As further regards all of the obviousness rejections argued herein, it is respectfully submitted that the cases of In re Fine, supra, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), make plain that the generalized assertions that it would have been obvious to combine or modify the reference do not properly support a § 103 rejection. It is respectfully submitted that those cases make plain that the Final Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon.

In particular, the Court in the case of In re Fine stated that:

The PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done. . . .

Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones stated that:

Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .

Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [subject matter].

In re Jones, 21 U.S.P.Q.2d at 1943, 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the Final Office Action offers only conclusory hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding. It is respectfully submitted that unsupported assertions are not evidence as to why a person having ordinary skill in the art would be motivated to modify the reference to provide the claimed subject matter and its benefits to address the problems met thereby, and it is respectfully submitted that the assertions to date in this regard are insufficient since the Office must provide proper evidence of a motivation or suggestion for modifying a reference to provide the claimed subject matter.

Still further, in the case of *In re Lee*, 61 U.S.P.Q.2d 1430, 1433-35 (Fed. Cir. 2002), the Court reversed the Board of Appeals for relying on conclusory statements, stating the following:

With respect to Lee's application, neither the examiner nor the Board adequately supported the selection and combination of the Nortrup and Thunderchopper references to render obvious that which Lee described. The examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is material to patentability, and could not be resolved on subjective belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher." Thus the Board must not only assure that the requisite findings

are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.

....

In its decision on Lee's patent application, the Board rejected the need for "any specific hint or suggestion in a particular reference" to support the combination of the Nortrup and Thunderchopper references. Omission of a relevant factor required by precedent is both legal error and arbitrary agency action.

[The] "common knowledge and common sense" on which the Board relied in rejecting Lee's application are not the specialized knowledge and expertise contemplated by the Administrative Procedure Act. Conclusory statements such as those here provided do not fulfill the agency's obligation.

[The] Board's findings must extend to all material facts and must be documented on the record, lest the "haze of so-called expertise" acquire insulation from accountability. "Common knowledge and common sense," even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority.

In short, there is no evidence that the references relied upon, whether taken alone, combined or modified, would provide the features of the claims discussed above. It is therefore respectfully submitted that the claims are allowable for these reasons.

As further regards all of the obviousness rejections of the claims, it is respectfully submitted that not even a *prima facie* case has been made in the present case for obviousness, since the Office Actions to date never made any findings, such as, for example, regarding in any way whatsoever what a person having ordinary skill in the art would have been at the time the claimed subject matter of the present application was made. (See *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998) (the "factual predicates underlying" a *prima facie* "obviousness determination include the scope and content of the prior art, the differences between the prior art and the claimed invention, and the level of ordinary skill in the art"))). It is respectfully submitted that the proper test for showing obviousness is what the "combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art", and that the Patent Office must provide particular findings in this regard — the evidence for which does not include "broad conclusory statements standing alone". (See *In re Kotzab*, 55

U.S.P.Q. 2d 1313, 1317 (Fed. Cir. 2000) (citing *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1618 (Fed. Cir. 1999) (obviousness rejections reversed where no findings were made “concerning the identification of the relevant art”, the “level of ordinary skill in the art” or “the nature of the problem to be solved”))). It is respectfully submitted that there has been no such showings by the Office Actions to date or by the Advisory Action.

In fact, the present lack of any of the required factual findings forces both Appellants and any Appeals Board to resort to unwarranted speculation to ascertain exactly what facts underlay the present obviousness rejections. The law mandates that the allocation of the proof burdens requires that the Patent Office provide the factual basis for rejecting a patent application under 35 U.S.C. § 103. (See *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984) (citing *In re Warner*, 379 F.2d 1011, 1016, 154 U.S.P.Q. 173, 177 (C.C.P.A. 1967))). In short, the Examiner bears the initial burden of presenting a proper *prima facie* unpatentability case — which has not been met in the present case. (See *In re Oetiker*, 977 F.2d 1443, 1445, 24, U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992)).

It is therefore respectfully submitted that claims 1, 3, 4, 6, 7, 9, 10, and 12 to 20 are allowable.

Finally, as regards the PRIOR RESPONSE mailed on January 18, 2006 (and insofar as it concerns paragraph eleven (11) of the Final Office Action), the text beginning at line 13 of page 25 (i.e., the second full paragraph of page 25) through line 2 of page 26 of the PRIOR RESPONSE (mailed on January 18, 2006) only concerned new claims 21 to 26 (and should have been adjacent the paragraph on new claims 21 to 26, since it only concerned those claims) and did not, as written, concern claims 1 to 20.

Conclusion

It is therefore respectfully submitted that all of claims 1, 3, 4, 6, 7, 9, 10 and 12 to 24 are allowable – like allowed claim 26. It is therefore respectfully requested that the objections and rejections be withdrawn, since all issues raised have been addressed and obviated. An early and favorable action on the merits is therefore respectfully requested.

Dated: _____

6/26/2006

Respectfully submitted,

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